

REMARKS

The Examiner and the Applicants held a telephonic interview on July 8, 2008. At this interview, the Examiner and Applicants reached agreement that the proposed amendments to claim 1 overcome the rejections. Applicants thank the Examiner for his time.

Claims 1, 2, 4-8, 19-24 and 26-30 are pending in this application.

Claims 1, 19 and 23 are amended. Support for these amendments may be found, for example, in [0007], [0053]-[0056], [0065]-[0068], and [0073]-[0077].

Claim Rejections Under 35 USC §103

Claims 1-8 and 19-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Yeager et al.*, US Publication No. 2003/0070070 (“Yeager”) in view of *Ajmani et al.*, “ConChord” Cooperative SDSI Certificate Storage and Name Resolution” (“Ajmani”). Accordingly, claims 1, 19 and 23 are amended and Applicants respectfully submit that amended claims 1, 19 and 23 and their respective dependent claims are allowable over Ajmani and Yeager.

General summary of Yeager, Ajmani and the present application:

Although Yeager, Ajmani and the present application seem to contain similar elements, these elements are used differently in each respective disclosure to solve different problems with different results.

Yeager is generally directed to solving the problem of deciding and rating the trustworthiness of peers in a decentralized, peer-to-peer network (Yeager, abstract and [0005]-[0010]). Yeager proposes a decentralized, distributed trust mechanism that provides methods and protocols for disseminating and updating trust relationships between peers (Yeager [0014]). Yeager’s trust mechanism includes, *inter alia*, peers that are designated as

Certificate Authorities (CA) and the use of X.509 certificates signed by these CAs (Yeager, [0017], [0019] [0123], [0152], [370]).

Ajmani is generally directed to solving the problem of looking up chains of SDSI/SPKI certificates in an efficient way (Ajmani, pg. 1, col. 2, 1st par.) SDSI/SPKI, as known to one of ordinary skill in the art, is a public key infrastructure that was developed to address the issues inherent in the X.509 public key infrastructure. “SDSI/SPKI obviates central certification authorities [of X.509] and allows principals to declare and modify complex trust relationships” (Ajmani, pg. 1, col. 1, Introduction) by using, *inter alia*, a “chained” delegation mechanism. Ajmani addresses the SDSI/SPKI chain look-up efficiency problem with a peer-to-peer deployment and name resolution system for SDSI/SPKI chains (Ajmani, pg. 1, col. 2, last par). Names may be locally defined in Ajmani and, unlike DNS, are not required to be unique. (Ajmani, pg. 2, 2 SDSI Background 2nd par.)

The present application, however, is generally directed to solving the problem of providing a secure alternative to the difficulty of DNS management (specification, [0007], [0054]-[0056], [0077]). DNS, as known by one of ordinary skill in the art, has a “tree-like hierarchy” of namespaces (specification, [0054]), with server computers registered so that client computers can resolve a name to the Internet protocol address of the server computer (specification [0004]). Due to the centralization of hierarchical namespaces, DNS requires a central server to be updated if a host changes any details associated with a name or namespace (specification, [0077]). The present application provides a more efficient way of performing DNS lookups and administration by providing methods and a computer-readable storage medium tangibly embodying a program of instruction that incorporates peer-to-peer characteristics and SPKI characteristics as an alternative to DNS (specification, [0007] and Figure 4).

Although similar elements are being used in Yeager and Ajmani, no combination of Yeager and Ajmani produces the results of the claimed material, as discussed in the following sections.

Claims 1 and 23:

Neither Yeager nor Ajmani teach, disclose or suggest at least the elements of amended claims 1 and 23:

generating one or more first cryptographic keys associated with
*a first namespace of a first domain, the first domain being a
member of a set of centralized hierarchical domains of
namespaces; [and]*

generating one or more next cryptographic keys associated with
a next higher-level namespace, *the next higher-level namespace
at a higher-level domain than the first namespace, the higher
level domain being another member of the set of centralized
hierarchical domains of namespaces.* (italics added for
emphasis)

Yeager's invention occurs on decentralized, distributed network platforms including peer-to-peer platforms (Yeager, [0014]). As known by one of ordinary skill in the art, peer-to-peer platforms do not have centralized, hierarchical domains of namespaces. In fact, a typical peer-to-peer environment essentially has a namespace without centralization, hierarchy or structure. *ScienceDirect Computer Communications 31* (2008) supports this commonly known concept of peer-to-peer networks on page 188: "P2Ps tenet is to maintain minimum centralizations in any form including not having any central directory... Any search...is a complex problem over unstructured P2P since there is no available explicit order." Likewise, About.com states: "Peer-to-peer (P2P) networking eliminates the need for central servers, allowing all computers to communicate and share resources as equals." ("http://compnetworking.about.com/od/p2ppeertopeer/Peer_to_Peer_File_Sharing_P2P_Net_working.htm," referenced June 26, 2008.) Thus, an ordinary understanding of a peer-to-peer network by one skilled in the art does not include a centralized, hierarchical domain of namespaces, as required by amended claims 1 and 23.

In fact, Yeager himself in his abstract and [0014] teaches the use of his on decentralized, peer-to-peer platforms: "Embodiments of a decentralized, distributed trust mechanism are described that may be used in various networking platforms, including, but not limited to, peer-to-peer and other decentralized networking platforms." Moreover, Yeager further states in [0203] that "a peer group may theoretically be as large as the entire connected universe. Naming anything uniquely is a challenge in such a large namespace."

Yeager clearly teaches away from “a set of centralized, hierarchical domains of namespaces,” as recited in amended claims 1 and 23.

The Office Action argued on pages 2 and 3 that Yeager does teach hierarchical namespaces by referencing Yeager [0017], [0019], [0162] and [0164]. Applicants do not agree that Yeager disclosed hierarchical namespaces. Yeager [0017], [0019], [0162] discuss Certificate Authorities and their uses in Yeager’s trust spectrums, but said passages are silent on the subject of namespaces. Yeager [0164] discusses peer-to-peer authorization services and is also silent on namespaces. Namespaces, CAs, peer authorization services, and trust spectrums are all distinct entities and are not synonyms. While Yeager appears to disclose a Certificate Authority, it does not disclose a namespace hierarchy as called for in the claims. Similarly, Yeager appears to disclose a trust spectrum level, it does not disclose a namespace hierarchy as called for in the claims. Finally, Yeager appears to disclose peer authorization, but again, it does not disclose a namespace hierarchy as called for in the pending claims. The cited passages of Yeager [0017], [0019], [0162] and [0164] do not teach, disclose or suggest namespaces, let alone a relationship between a namespace and a CA, trust spectrum or peer authorization service. This makes sense, because, as previously discussed, peer-to-peer networks by their ordinary definition have a flat namespace.

Furthermore, any peer in a peer-to-peer group or environment may be configured as a Certificate Authority or a peer authorizer. A higher level namespace is not a criteria for becoming a Certificate Authority or a provider of peer authorization services. Indeed, Yeager supports this equal opportunity peer-to-peer CA designation in [0388]: “Each peer group may include one or more peers that may serve as a certificate authority in the group.” No mention of higher or lower namespace as a prerequisite for becoming a CA is found in Yeager.

Ajmani also does not teach these missing elements of amended claims 1 and 23. Ajmani teaches localized, not centralized namespaces, for example, on page 1, col. 1, 1st paragraph: “In SPKI/SDSI, names are defined in local namespaces...” and again on page 2, col. 1, 3rd paragraph: “The main innovation of SDSI is the use of local names. Unlike DNS, in which names must be unique in a global namespace...” This makes sense as the inherent

nature of SPKI, as known to one of ordinary skill in the art, does not require a centralized structure or authority.

Each of the elements of amended claims 1 and 23 refer to a first and a next-higher level namespace whose domains are from a set of centralized hierarchical domains of namespaces, and/or authorities derived from these namespaces. Neither Yeager nor Ajmani teaches, discloses or suggests “a first namespace of a first domain of a set of centralized, hierarchical domains of namespaces” and “the next higher-level namespace at a higher level domain than the first namespace, the higher level domain being a member of the set of centralized, hierarchical domains of namespaces,” as recited in amended claims 1 and 23.

The present application provides benefit over Yeager and Ajmani as it provides an alternative to the administrative headaches and costs of DNS lookups. With the present invention, when details of a namespace require updating, a host may update details freely without having to find and communicate back and forth with a central server to perform the updates as in traditional DNS structure. Yeager does not even set his invention in the centralized, hierarchical DNS namespace environment and therefore cannot address administrative issues particular to this environment. Ajmani’s invention is also set in a decentralized namespace environment where names are defined locally, not centrally. The present application, however, provides a secure, efficient alternative to DNS.

For at least the above reasons, Applicants respectfully submit that no combination of Yeager and Ajmani teaches, discloses or suggests each and every element of amended claims 1 and 23. Amended claims 1 and 23 are thus allowable over Yeager and Ajmani under USC §35 103(a).

Claims 2, 4-8, 24 and 26-30:

Claims 2 and 4-8 depend from claim 11. Claims 24 and 26-30 depend from claim 23. 35 U.S.C. §112, ¶4 states that “A claim in dependent form ... specif[ies] a further limitation ... [and] shall be construed to incorporate by reference all the limitations of the claim to which it refers.” Therefore, dependent claims 2, 4-8, 24 and 26-30 incorporate by

reference all limitations of their respective independent claim. Applicants respectfully submit that claims 2, 4-8, 24 and 26-30 are also allowable over Yeager and Ajmani under USC §35 103(a) for reasons similar to independent claims 1 and 23.

Claim 19:

Neither Yeager nor Ajmani teaches, discloses or suggests at least the elements of amended claim 19:

generating a first field comprising a first authority component associated with a first public key, the first public key being part of a first private key-public key pair and the first authority component corresponding to *a first namespace of a first domain, the first domain a member of a set of centralized, hierarchical namespaces*; and

generating a second field comprising a second name component associated with a second namespace, *the second namespace corresponding to a second authority and a domain of the second namespace being another member of the set of centralized, hierarchical namespaces and being at a lower level than a domain of the first namespace*, wherein the first authority component and the second name component are capable of resolving to ~~a~~ the second authority. (italics added for emphasis)

As previously discussed for claims 1 and 23, Yeager does not teach, suggest or disclose a first namespace of a first domain, where the first domain is a member of a set of centralized, hierarchical namespaces. Yeager teaches a decentralized, peer-to-peer networking environment whose namespaces are, by ordinary understanding, decentralized and flat. The Office Action's citation of Yeager [0017] and [0162] as teaching "a domain of the second namespace at a lower level than a domain of the first namespace" is in error. While Yeager teaches certificate authorities in these passages, he does not teach, suggest or disclose CAs being associated with a lower or a higher level namespace.

Ajmani also does not teach, suggest or disclose a first namespace of a first domain, where the first domain is a member of a set of centralized, hierarchical namespaces. As previously discussed, SPKI/SDSI does not require centralization, indeed, names in

SPKI/SDSI are local. Thus, no combination of Yeager and Ajmani teaches, discloses or suggests the first element of amended claim 19.

Similarly, no combination of Yeager and Ajmani teaches, discloses or suggests the second element of amended claim 19 that recites, *inter alia*, “the second namespace corresponding to a second authority and a domain of the second namespace being another member of the set of centralized, hierarchical namespaces and being at a lower level than a domain of the first namespace.” As previously established, Yeager teaches a decentralized, peer-to-peer networking environment whose namespaces are, by ordinary understanding, decentralized and flat. The Office Action’s citation of Yeager [0017] and [0164] as teaching “a domain of the second namespace at a lower level than a domain of the first namespace” is in error. While Yeager teaches certificate authorities and peer authorization services in these passages, he does not teach, suggest or disclose CAs or peer authorizations being associated with a lower or a higher namespace.

Ajmani also does not teach, suggest or disclose a second namespace in a domain from a set of centralized, hierarchical namespaces at a lower level than the domain of the first namespace. As previously discussed, SPKI/SDSI does not require centralization as names in SPKI/SDSI are locally defined. Thus, no combination of Yeager and Ajmani teaches, discloses or suggests the second element of amended claim 19.

For at least the above reasons, Applicants respectfully submit that no combination of Yeager and Ajmani teaches, discloses or suggests each and every element of amended claim 19. Amended claim 19 is thus allowable over Yeager and Ajmani under USC §35 103(a).

Claims 20-22:

Claims 20-22 depend from claim 19. Claims 35 U.S.C. §112, ¶4 states that “A claim in dependent form ... specif[ies] a further limitation ... [and] shall be construed to incorporate by reference all the limitations of the claim to which it refers.” Therefore, dependent claims 2, 4-8, 24 and 26-30 incorporate by reference all limitations of their

respective independent claim. Applicants respectfully submit that claims 20-22 are also allowable over Yeager and Ajmani under USC §35 103(a) the for reasons similar to independent claim 19.

CONCLUSION

In view of the above amendment and arguments, Applicants submit the pending application is in condition for allowance and an early action so indicating is respectfully requested.

The Commissioner is authorized to charge any fee deficiency required by this paper, or credit any overpayment, to Deposit Account No. 13-2855, under Order No. 30835/303114, from which the undersigned is authorized to draw.

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Respectfully submitted,

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